

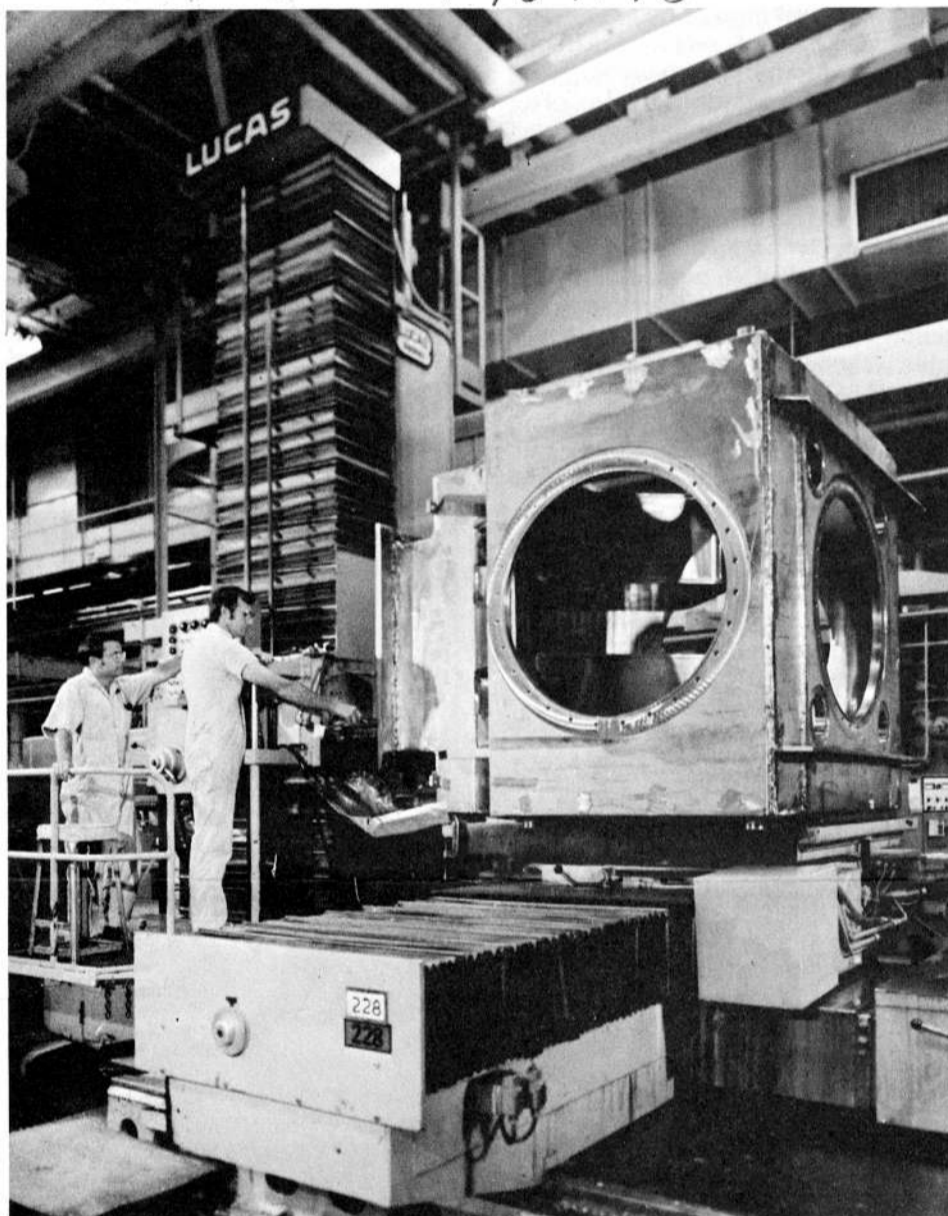
Nuclear Division News



A Newspaper for Employees of the Nuclear Division, Union Carbide Corporation

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167193



VACUUM CHAMBER MACHINING—A vacuum chamber designed for use in ORNL's Thermonuclear Division is shown during a machining operation in the 9212 shop. Two of the Y-12 Fabrication Division craftsmen who worked on the project are James C. Lay, left, and Kenneth W. Hopper.

Y-12 makes vacuum chamber

Oak Ridge Y-12 Plant craftsmen have made an aluminum vacuum chamber for use in the ORNL Thermonuclear Division's neutral beam injection program.

The chamber is approximately 82 inches tall, 44 inches wide, 76 inches long and varies from one-half to one inch in thickness. It was fabricated through a four-step process that involved the welding and machining shops in Alpha-1 and the 9212 machine shop. Following fabrication, the chamber was vacuum tested at 1 x 10⁻⁹ torr.

The chamber was made for the 150 Kev test stand being built in Thermonuclear Division as part of the development of high intensity neutral beam injection systems. Such systems are expected to play an important role in increasing plasma ion temperatures in advance fusion ex-

periments at ORNL and the Princeton Plasma Physics Laboratory.

The equipment was designed by Phillip Thompson of ORNL. Ward Wright, Engineering Division, was project engineer for the fabrication.

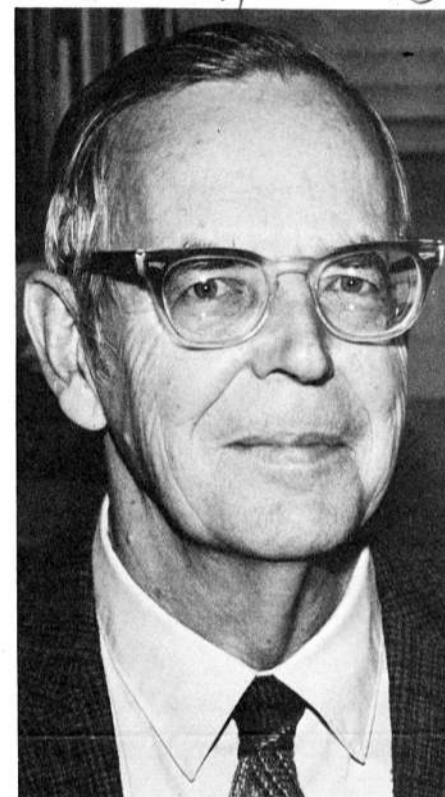
Russell named Union Carbide Senior Research Fellow

4273-73

William L. Russell, considered by many to be the world's authority on mammalian mutagenesis, has been named a Senior Research Fellow of Union Carbide Corporation. Russell is a principal geneticist in the Biology Division of Oak Ridge National Laboratory.

In announcing Russell's honor, Roger F. Hibbs, president of the Nuclear Division, said, "The award is the highest recognition which can be received by Union Carbide Corporation research personnel." Hibbs added that this is the first time that a member of the Nuclear Division staff has been designated a Senior Research Fellow of the Corporation.

In order to receive this honor, a researcher must be recommended by the president of the division in which he works. His nomination must then be approved by the Corporate Technology Committee and endorsed by the Corporate Management Committee.



William L. Russell
Senior Research Fellow

World's largest study

Russell organized and, for over 28 years, has been in charge of the world's largest study of the genetic effects of radiation in a mammal. At the time the program got under way, virtually nothing was known about the genetic effects of radiation in mammals, and it was doubtful that results from lower organisms could be extrapolated to man.

The studies of Russell and his co-workers soon provided the data that, over the years, have formed the basis for estimating genetic hazards of radiation to man. The corresponding recommendations made by national and international committees, such as the National Academy of Sciences Advisory Committee on the Biological Effects of Ionizing Radiation and the United Nations' Scientific Committee

on the Effects of Atomic Radiation, are based primarily on the results of studies by Russell and his group.

Practical implications

Russell's early findings that mammals are much more sensitive than *Drosophila* (small flies used extensively to study the basic mechanisms of inheritance) to radiation-induced mutation formed the basis on which the National Academy of Sciences Committee, in its 1956 report, recommended a reduction in the permissible dose. Two years later, the Oak Ridge group reported another finding that radically changed human risk estimates—namely, a marked effect of dose-rate, which lowered the human risk. The dose-rate effect had direct and important practical implications with regard to estimations of human risk from radiation and the setting of standards and regulations for peaceful uses of atomic energy.

Russell's research in radiation genetics is still very active. Over the past few years, this has been combined with research in chemical mutagenesis. The complexities in this field are turning out to be even greater than in radiation mutagenesis. However, the methods developed by Russell that have been so informative in mammalian radiation genetics are proving equally useful in mutagenesis studies with chemicals, including those related to energy production.

inside ...



The Oak Ridge installations gleaned safety honors recently for 1975's safety performances, as reported on page 2.

Other items of interest:

- Question Box. page 3
- Martha Ketelle named technical assistant page 4
- Air-Conditioning Part II. page 5
- Dr. Lincoln page 7

Oak Ridge installations honored for on-the-job safety



RECEIVE Y-12 AWARD—Jack M. Case, Y-12 Plant Manager, presents the Y-12 safety plaque to officials of the Atomic Trades and Labor Council. From left are Terry Calhoun, ATLC's recording secretary; C. E. Robinson, vice president; Case; George Tate, representing Local Three of the International Guard Union of America; Norman A. O'Neal, financial secretary of ATLC; and Clarence Johnson, Y-12's safety director.



TRIPLE HONORS—Nuclear Division President Roger F. Hibbs (second from right) presents one of three safety awards earned by Oak Ridge National Laboratory in 1975 to Herman Postma (right), ORNL director. Also present for the presentations were ORNL Health Physics Division Director John A. Auxier (left), representing Health Physics' Safety Department, and Norman Beeler, president of the Atomic Trades and Labor Council. ORNL received the Union Carbide Corporation award for Distinguished Safety Performance, the National Safety Council's Award of Honor and the Energy Research and Development Administration's Award of Honor.



ORGDP AWARDS—The National Safety Council's Award of Merit and the Energy Research and Development Administration's Achievement Award were gleaned by ORGDP for 1975's outstanding safety performance. From left are John S. Herron, vice president of the Oil, Chemical and Atomic Workers, local 3288; Robert A. Winkel, ORGDP Plant Manager; and B.I.V. Bailey, ORGDP's safety director.

Nuclear Division employees were honored recently by the Energy Research and Development Administration and the National Safety Council for sterling safety performances in 1975. Honors were presented to the Oak Ridge installations, and the Paducah Gaseous Diffusion Plant will be honored later this year.

Low injury rate

The Y-12 Plant received ERDA's Special Award for an outstanding continuing low accident rate. The disabling injury rate has been well below 1.0 for 14 consecutive years where industry as a whole is 9.0 and the chemical industry is around 5.0.

Robert Hart, Oak Ridge Operations Manager for ERDA, presented the Y-12 award at a special luncheon recently in Oak Ridge. The plaque was later acknowledged in the plant by Jack M. Case, Y-12 Plant Manager, who invited union officials and Clarence Johnson, safety director, to share the laurels. "It belongs to the entire plant population," Case stated.

ORGDP honored

Oak Ridge Gaseous Diffusion Plant took ERDA's Achievement Award as well as the National Safety Council's Award of Merit. There was a significant increase in safety and accident prevention activities at ORGDP in 1975 and the additional efforts paid dividends in the overall program.

With all the additional work activities which involve new employees, new supervisors, new equipment and increased exposure, the safety performance was above average.

Three significant disabling injury-free periods were recorded during 1975, for periods of 2,040,345, 3,135,160 and 2,250,452 man-hours recorded without a lost time injury.

ORGDP has developed a positive pride in its overall safety program; enlisted the support of all personnel in carrying out the program; and stressed the importance of the positive in accident prevention.

ORNL laurels

Oak Ridge National Laboratory earned three safety awards in 1975: the Union Carbide Corporation Award for Distinguished Safety Performance, the National Safety Council's Award of Honor and the Energy Research and Development Administration's Award of Honor.

The Union Carbide award was presented to ORNL for working more than four million employee hours without a disabling injury during a period of 90 days or more. ORNL's record is 216 days — 4,543,462 hours. The same record won ORNL the NSC Award of Honor, which is presented for working more than three million employee hours or more without a disabling injury.

wanted



Y-12

RIDE from North Hills, Knoxville, to Bear Creek Portal, straight day. H. A. Hanna, plant phone 3-7988, home phone Knoxville 522-0587.

ORGDP

WILL JOIN car pool from Sans Souci Apartments, Walker Spring Road section, Knoxville, to Charlotte Hall, Oak Ridge, straight days. Joyce A. Holt, home phone 690-2013.

CAR POOL members from Kingston Heights, Kingston, to any portal, straight days. E. T. Strunk, plant phone 3-3364, home phone Kingston 576-6637.

ORNL

RIDE in car from Bearden area to West Portal, 8-4:30 shift. Marie, 3-1257.



BEGLEY—BURBAGE—Myrtle Begley and Charles H. Burbage were married in June at the First United Methodist Church in Oak Ridge, with the Rev. Ben B. St. Clair officiating. Mrs. Burbage is employed at the Oak Ridge, and the bridegroom is in ORGDP's Engineering Division.

The third award, ERDA's Award of Honor, was received for achieving a 30 percent or greater reduction in the injury "incidence rate"—number of lost workday cases per 200,000 hours. ORNL earned the award by reducing its rate more than 30 percent over last year's rate.

safety scoreboard

Time worked without a lost-time accident through July 29:

Paducah	122 Days	1,397,000 Man-Hours
ORGDP	33 Days	984,824 Man-Hours
Y-12 Plant	145 Days	4,151,000 Man-Hours
ORNL	262 Days	5,284,565 Man-Hours

question box

If you have questions on company policy, write the Editor, Nuclear Division News (or telephone your question in, either to the Editor, or to your plant contact). Space limitations may require some editing, but pertinent subject matter will not be omitted. Your name will not be used, and you will be given a personal answer if you so desire.

Job classification

QUESTION: I think the work I am doing should be classified two grades higher. My supervisor says if the job were reclassified it would have to be put up for bid. This doesn't seem fair. What can I do to get my job classified properly?

ANSWER: The grade level of salary positions in UCND are determined by a formal job evaluation system. If any supervisor feels that one of his/her employees is not properly classified, the facility salary office should be requested to study and evaluate the position. If the position is found to be improperly evaluated, any incumbent who has been working in the position would be reclassified without regard to the Job Opportunity System.

Day care center

QUESTION: A rebuttal to your answer of January 8, 1976, re: Day Care Center availability. Please disclose the five day care centers operating in Oak Ridge. There are two in the phone book, one which takes children one year and older; the other, two years and older.

Isn't the maximum cost more than \$25 per week? Couldn't we have another survey? There are twice as many working mothers on the payroll as compared to 1972.

ANSWER: In addition to the two all-day private centers listed in the telephone book (Yellow Pages - "Day Nurseries") there is a third all-day center operated in the Scarboro area by Church Women United (483-6871). There are three centers in Oak Ridge operated by the Anderson County Day Care Program (Highland View, Elm Grove and Scarboro). Information about these centers and nine others in Anderson County may be obtained by calling the Anderson County Day Care Program at 482-1650 in Oak Ridge and/or 457-4200 in Clinton. The people at the Tennessee Department of Human Services (Knoxville 522-7170) will give you information about day care in over 180 centers in Knox County. The current maximum costs are still about \$25 per week.

None of the centers admit children under one year of age and there are waiting lists at many of the centers. An ad in newspapers has sometimes been used to draw responses from people willing to care for children under one year of age or when there are other problems in obtaining proper child care.

UCC incentive program

QUESTION: In the 1975 Union Carbide annual report there is a

reference to an employee "incentive program," for "key employees," which consists of cash payments and stock options. Does the Nuclear Division participate in this program? What is a "key employee?"

ANSWER: The incentive program referred to consists of a "long-term" plan, which is a combination cash payment and stock option plan, and an "annual" plan, which is a separate cash awards plan. In the March 16, 1976 proxy statement sent to stockholders, it is reported that approximately 40 UCC employees participate in the "long-term" plan and that there were no awards in 1975 under the "annual" plan. Information concerning participants in the plans is not published except for the five top officers by name and all other UCC officers and directors as a group. This information is given on page 13 of the proxy statement referred to.

"Key employees," for the purpose of these plans, are those at Corporate or Division Officer levels and other high-level positions.

Company identification

QUESTION: I heard a recent energy conservation program on the local radio station close with the words: "This program featured John Jones (not real name) of the Oak Ridge National Laboratory." It would seem to be a more appropriate policy to require that employees be publicly identified as being of the Union Carbide Corporation's Nuclear Division. At least, it might be of some aid to those of us having a nest egg of corporate stock in Union Carbide.

ANSWER: It is a very natural thing for individuals to identify with their immediate installation or organization where their work is being performed. This same type statement might be made by an employee at Y-12, ORGDP, or Paducah, or for that matter, the Loudon Plant. We normally encourage employees to identify themselves with their installation, the Nuclear Division, and Union Carbide, in that order.

anniversaries

Y-12 PLANT

30 YEARS

Harlan D. Whitehead, Development Operations; and Edward E. Turner, Guard Department.

25 YEARS

Thomas H. Barton Jr., Albert L. Foland, Carl F. Keylon, Mac H. Strickland, Inman M. McPeters, Leroy Holbert Jr., Clarence R. Bolt, Thelmer C. Stephens, Clyde L. Moore, William H. Sherrod, Donald J. Schafer, John B. Shepard, Virginia G. Scarbrough, Robert S. Hopper, Bobby E. Lunsford and Billy J. Littleton.

20 YEARS

Fred M. Jones, Clara Mae Smith and Edgar S. Cochran.

Earns international forestry award

2997-74

David E. Reichle, an associate director of the Environmental Sciences Division, Oak Ridge National Laboratory, received the International Union of Forestry Research Organizations' 1976 "Scientific Achievement Award" during the organization's 16th World Congress in Oslo, Norway, last month.

The award which is presented once every four years, was established "to recognize distinguished individual scientific achievement in forestry research within the fields covered by the International Union of Forestry Research Organizations." The award is based on "published results" of significant research or an extended period of major accomplishment which clearly demonstrate either originality or importance for the future advancement of forestry.

Reichle's selection was based on his research efforts involving total system analysis of a deciduous forest tagged 12 years ago with radioactive cesium, and ecosystem-level research on carbon metabolism and nutrient cycling.

A native of Cincinnati, Ohio, Reichle holds a bachelor's degree from Muskingum College, and M.S. and Ph.D. degrees in ecology from Northwestern University.

After conducting research at ORNL under a two-year AEC postdoctoral fellowship, he joined the Environmental Sciences Division staff in 1966. Prior to his appointment as associate director in 1975, he was program director for Ecosystem Analysis.

He is a fellow of the American Association for the Advancement of Science, and holds membership in several other professional organizations.

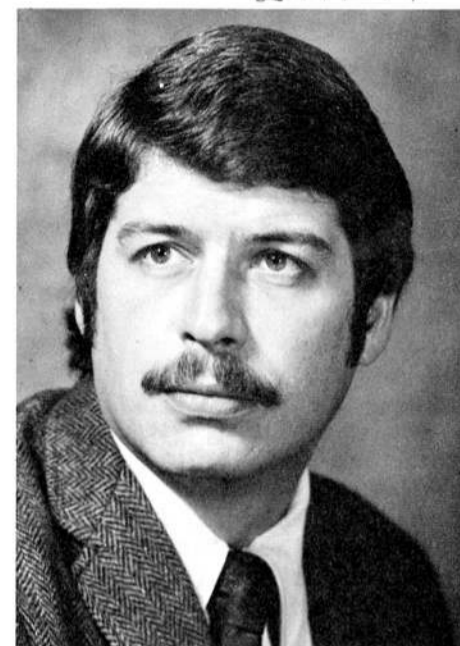
The Reichles reside at 112 Newcrest Lane in Oak Ridge.

ORGDP reports \$76 million in toll enrichment sales

Approximately \$76 million in toll enrichment sales were reported at the Oak Ridge Gaseous Diffusion Plant during the second quarter of 1976, bringing the total sales for the year to nearly \$120 million. This compares to \$92 million in sales reported during the first half of 1975.

During the second quarter of 1976, more than 686,000 pounds of enriched uranium were shipped for use in nuclear reactors in France, Japan and West Germany, and in the states of Maine, Michigan, Pennsylvania, South Carolina and Virginia.

Under the Toll Enrichment Program, privately licensed owners bring their uranium to a gaseous diffusion plant for enriching on a toll basis. Customers are charged for the services required to separate from natural uranium the desired percentage of the uranium-235 isotope, usually between two and three percent.



David E. Reichle

Elected officers of ANS Division



J. L. Scott



J. A. Horak

James L. Scott and James A. Horak, Metals and Ceramics Division at Oak Ridge National Laboratory, have been elected chairman and secretary-treasurer, respectively, of the Materials Science and Technology Division of the American Nuclear Society. They assumed office at the Society's recent annual meeting.

Scott, who is manager of the Magnetic Fusion Energy Materials Program, joined the Nuclear Division in 1956. He holds a B.S. degree in chemical engineering and M.S. and Ph.D. degrees in metallurgical engineering, all from the University of Tennessee, and was a UT faculty member before coming to ORNL.

In addition to the ANS, Scott is a member of the American Society for Metals. He and his wife, Jane, live in Knoxville; they have a son and a daughter.

Horak, a senior research scientist in Metals and Ceramics Division's radiation effects group, received his B.S. degree in metallurgical engineering from the University of Illinois, and his M.S. and Ph.D. degree in materials science from Northwestern University. Before joining the Nuclear Division in 1974, he worked at Argonne National Laboratory, Los Alamos Scientific Laboratory, and as professor of nuclear engineering at the University of New Mexico.

He is a member of the ERDA US-USSR Scientific Team on Materials Technology for Fusion Power and serves on several ANS committees. Horak, his wife, Diane, and their three sons reside in Martel.

Three more chosen as Fellows

Martin, Slaughter to be honored by ASM



W. R. Martin

G. M. Slaughter

William R. Martin and Gerald M. Slaughter, Metals and Ceramics Division, will receive the rank of Fellows of the American Society for Metals at the Society's annual dinner in October. In making the announcement, ASM Managing Director Allan Putnam cited both men for their contributions in the field of metals and materials.

Martin came to the Nuclear Division in 1959, after working at the Portsmouth Gaseous Diffusion Plant and the Army's White Sands Missile Range in New Mexico. He holds a B.S. degree in metallurgical engineering from the University of Cincinnati and has done graduate work at the University of New Mexico and the University of Tennessee. He is currently manager of Metals and Ceramics' engineering materials section.

Martin is a member of the American Society for Testing and Materials and the American Association for the Advancement of Science. He and his wife, June, have three sons, Mark, Mike and William; they live in Oak Ridge.

After receiving his bachelor's and master's degrees in metallurgical engineering from Rensselaer Polytechnic Institute, Slaughter joined the Nuclear Division in 1951. He is leader of Metals and Ceramics' welding and

brazing groups, and also manages three ORNL programs on welding, steam generators and piping development.

Slaughter is active in the American Welding Society as well as the ASM. He and his wife, Doris, have a son, Richard, and a daughter, Donna. The Slaughters live at 123 Mason Lane, Oak Ridge.

APS elects Kelley

G. Davis O'Kelley, research staff member in Oak Ridge National Laboratory's Chemistry Division, has been elected a Fellow of the American Physical Society.

Fellowship in the APS is conferred on members who have made contributions to the advancement of physics through independent original research or who have rendered a special service to the field of physics.



G.D. O'Kelley

O'Kelley joined the Nuclear Division in 1954 after receiving his Ph.D. degree in chemistry from the University of California at Berkeley

and working for the California Research and Development Company. He is currently a member of the Committee on Nuclear Science and chairman of the Subcommittee on Radiochemistry for the National Research Council.

He is a member of the American Chemical Society, the American Association for the Advancement of Science, the American Geophysical Union and Sigma Xi, and is a member of the faculty at the University of Tennessee.

O'Kelley and his wife, Genie, live at 8228 Cortland Drive, Knoxville. They have a daughter, Mrs. Joanne Kline, and a son, Kevin Davis O'Kelley.

In Advanced Energy Systems

Appointed technical assistant



Martha J. Ketelle

The appointment of Martha J. Ketelle as technical assistant to Murray W. Rosenthal, associate director for Advanced Energy Systems at

Oak Ridge National Laboratory, has announced. She replaces Ted Lundy, who has returned to the Metals and Ceramics Division following his assignments in the Long Range Planning Group and on Rosenthal's staff.

A native of Oak Ridge, Ketelle received her bachelor's degree in geology from Earlham College in 1967. In 1970, she received an M.S. degree in hydrogeology and water resources management from the University of Wisconsin.

Ketelle worked at the Water Resources Research Center in Madison, Wisc., prior to joining the Laboratory staff in 1972. Initially, she was a member of Chemical Technology Division staff, and worked on the evaluation of geologic alternatives for nuclear waste disposal.

For the past two years Ketelle has worked part-time with the Energy Division's regional and urban studies section evaluating the environmental effects of surface mining of coal, while studying environmental planning and

division deaths

Robert N. Armstrong, an outside machinist in the Maintenance Division at Y-12, died July 21 in a Knoxville hospital. He lived at 109 Henderson Lane, Oak Ridge.



Mr. Armstrong

A native of Athens, he was first employed at the Oak Ridge Gaseous Diffusion Plant, and from 1961 to 1967 operated a service station in Oak Ridge. He came to

Y-12 then in Research Services.

Survivors include his wife, Thelma Lee Williams Armstrong; a son, Robert R. Armstrong; two grandchildren; three sisters, Mrs. W.C. Kinser, Mrs. Eugene Newman and Mrs. J.R. Thompson; and a brother, Richard Armstrong.

Funeral services were held at the Weatherford Mortuary with the Rev. Lee Morris officiating. Burial followed in the Oak Ridge Memorial Park.

William A. Davis, Cascade Operations at the Oak Ridge Gaseous Diffusion Plant, died July 26 in a Knoxville hospital.



Mr. Davis

A native of Maryville, he has been employed at ORGDP since 1944. The Davis home is on Sugar Grove Valley Road, Harriman.

He is survived by his wife, Helen Caldwell Davis; a daughter, Bonnye Parrett; two grandchildren; and a brother, Otha Davis.

Graveside services were held at the Pleasant Grove Baptist Church in Maryville with the Rev. James G. McCluskey officiating.

The family has requested that any memorials be in gifts to the Oak Ridge Cancer Cupboard, in care of Mrs. Everett Ramsey, 100 Chatham Lane, Oak Ridge.

James O. Williams, a laundry supervisor in Operations Division at Oak Ridge National Laboratory, died July 16 in Fort Sanders Hospital, Knoxville. A veteran of World War II, Mr.



Mr. Williams

Williams had been with the Nuclear Division since 1954.

He is survived by his wife, Katherine Williams; a daughter, Helen Jones; two sons, James Jr. and

design at Harvard University. In June, she received her master's degree in landscape architecture from Harvard.

Ketelle is a member of the Oak Ridge Regional Planning Commission. She resides with her husband, John Clarke, director of ORNL's Thermodynamic Division, at 24 Brookside Drive in Oak Ridge. Her father, Bruce Ketelle, works in the Chemistry Division at the Laboratory.

Hazen; five sisters, Mary Louise Williams, Mrs. John Bryant, Mrs. John Flanigan, Mrs. Elaine Kiser and Mrs. Gordon Massengill; one brother, Jesse Williams Jr., and four grandchildren.

Graveside services were held July 18 at Highland Memorial Cemetery.

Violet B. Geis, a senior secretary in General Engineering at Oak Ridge National Laboratory, died July 19 at the University of Tennessee Hospital after a brief illness.



Mrs. Geis

A native of Moors Gap, Mrs. Geis joined the Nuclear Division in 1952, working first at the Oak Ridge Gaseous Diffusion Plant and later at the Y-12 Plant. She began working at the ORNL site in

August, 1975.

She is survived by her husband, Walter F. Geis; a stepson, Walter Geis Jr.; a stepdaughter, Mary Phillips; her parents, Mr. and Mrs. C.M. Brooks; four sisters, Mrs. Obern Walker, Mrs. George Crowe, Mrs. Chandler King and Mrs. Betty Mosteller; a brother, J. Will Brooks; and several nieces and nephews.

Funeral services were held July 22 at Holley-Gamble Funeral Home Chapel in Clinton, followed by burial in Norris Memorial Gardens.



Mr. Dupree



Mr. Stephens

Two Paducah Plant employees died recently.

John E. Stephens Jr., Process Engineering Department, died as a result of a traffic accident.

Mr. Stephens transferred to the Paducah Plant from ORGDP in 1951. He was a native of Walnut, Miss. and a graduate of the University of Mississippi.

Survivors include his wife, Martha Elizabeth; son, John E. Stephens III; and daughter, Ann. Two sisters also survive.

Clyde C. Dupree, a maintenance supervisor in the Plant Service Department, died at his Paducah home. A native of Graves County, he was a veteran of World War II, and came to work with Union Carbide after employment with the Gilliam Candy Company.

Survivors include his wife, Dorothy; daughters, Cynthia, Lori and Lisa; and son, Steve.

next issue ...

The next issue will be dated August 19. The deadline is August 11.

Part 2 of 2

Insulation, clean filter aid in air conditioner efficiency

Following is the conclusion of the article begun in the last issue discussing factors to be considered in choosing and operating room air conditioners for maximum efficiency. The information is based on two recent ORNL Energy Division reports by John C. Moyers and David A. Pilati, who is now with the University of Illinois (Pilati's name was inadvertently omitted from last issue's article).

by Karen Cromer

As a rule, today's consumer is willing to pay more for efficiency in a room air conditioner. As electricity prices increase, consumers are giving more attention to operating costs and long-term economic benefits—factors which often overcome the doubts generated by the initial price of the unit.

Individuals should attempt to minimize their lifetime costs by purchasing more efficient (and, in general, more expensive) units if high operating costs warrant it, according to the Pilati report.

This "you get what you pay for" idea is shown by Moyers in comparing the efficiency of two differently priced units. The cheaper model, priced at \$270, yearly consumes almost 800 kilowatt-hours more electricity than the \$315 model. In 10 years, the cumulative electricity savings of the more efficient model would equal almost twice its extra initial cost.

Continuous vs. automatic fans

Most room air conditioners have fans that operate continuously once the unit is turned on. For example, only 2 of 17 room air conditioners recently tested by Consumers Union had automatic fans.

Pilati's study shows that continuously operating fans lower the efficiency of high-EER units. The milder the outdoor temperature, the less efficiently a continuous fan model will operate.

"Room air conditioning power requirements could be reduced by about 10 percent, or about 4.4 billion kilowatt hours in 1975, if units were converted to automatic fan operation," says Pilati.

Operating Tips

Once you've made the purchase,

the reports by Moyers and Pilati offer some energy and money-saving ideas on how to operate your unit:

Adequate insulation—An adequately insulated home requires less energy for air conditioning than a poorly insulated one. For example, a well insulated gas-heated home in Atlanta requires 22 percent less energy for cooling than a home built with Federal Housing Authority requirements before 1971 and originally without air conditioning.

Clean filters—Frequent changes or cleaning of the filter retards lint and dirt buildup in the evaporator, which would lower both the cooling capacity and the efficiency.

Higher thermostat settings—An increase in thermostat setting from 75 to 78 degrees F, reduces the AC electricity consumption by about twenty-five percent.

Natural ventilation—The cooling provided by natural ventilation (doors, windows, etc.) can make a substantial difference in the cooling required by an air conditioner. For the 10 cities investigated, energy savings from natural ventilation ranged from 12 percent in Phoenix to nearly 73 percent in San Diego. (Fixed storm windows are energy consumers during the cooling season since they prohibit the use of natural ventilation cooling.)

Future regulation

For future air conditioner buyers, Moyers and Pilati offer two suggestions:

Promote labeling—Encourage states to require prominent and informative labeling and advertising.

Minimum efficiency level—Establish a requirement that units meet some minimum efficiency level.



L. T. Biles



W. R. Conner



T. M. Jennings



J. E. Shaughnessy



E. C. Simmons



J. L. Smith

Paducah tells six promotions

Six promotions have been announced at the Paducah Gaseous Diffusion Plant.

Leon T. Bible has been named a security inspector in the Employee Relations Division. He has been with Union Carbide for six months, after serving for 21 years in the U.S. Air Force.

A native of Water Valley, Miss., Biles and his wife, Laural, have four children, Latanya, Leon Jr., Lantz and Leland. They live at 1623 N. 12th Street, Paducah.

Walter R. Conner was promoted to senior inspector in the Engineering Division. He has been with Union Carbide for more than 18 years and had previously served in the U.S. Navy.

Conner is a native of Graves County, Ky. He and his wife, Marie, have four sons, Richard S., Shane E., James R., and William S., and a daughter, Nancy. Their home is at 3718 Springdale Circle, Paducah.

T. Michael Jennings, who received from Southern Illinois University, was appointed an assistant superintendent of the Metallurgical Engineering and Inspection Department. He also serves as the department's quality assurance coordinator.

Jennings joined Union Carbide in 1966, served in the U.S. Army for two years, and returned to Carbide in 1968. A native of Metropolis, Ill., he is married to the former Elizabeth Tripoli. The couple has twin daughters, Christina and Sherry, and they live on Olivet Church Road, Paducah.

James E. Shaughnessy was named a senior inspector in the Engineering Division. Before joining Union Carbide 13 years ago, he worked for General Telephone Company and served in the U.S. Marines.

A native of Fairbury, Ill., Shaughnessy has an associated degree from Southern Illinois University. He and his wife, Marian, have a son, James, and four daughters, Jessica, Jennifer, Mary and Theresa. The Shaughnessys live on Route 4, Kevil, Ky.

Earl C. Simmons has been promoted to a maintenance foreman in the Fabrication and Maintenance Division. He worked in construction and served in the U.S. Air Force prior to joining Union Carbide 21 years ago.

Simmons is a member of the Arlington Volunteer Fire Department, American Legion and the Bardwell Lions Club. He serves on the Scholarship Board of Carlisle County High School, the Board of Directors on Senior Citizens Council and is co-chairman of the Carlisle County Board of Education.

A native of Wickliffe, Ky., he and his wife, the former Jane Burton, have a son Earl C. Jr., and two daughters, Deborah and Celia. Their home is on Route 1, Arlington, Ky.

Jerry L. Smith was promoted to senior inspector in the Engineering Division. He worked as a carpenter and in office equipment sales and service prior to joining the Union Carbide staff one year ago.

Smith is a native of Graves County, Ky., and lives on Route 1, Hardin, Ky.

Kyle Fraker to head ORNL mail service



K. E. Fraker

Kyle E. Fraker, Finance and Materials Division at Oak Ridge National Laboratory, has been promoted to chief of mail services.

Fraker, who was assistant chief of mail services before his promotion, joined the Nuclear Division in 1969 and worked in the Plant and Equipment Division before being transferred to the mail center. Before joining Union Carbide he was employed by Magnet Mills, Inc., in Clinton.

A native of Anderson County, Fraker and his wife, Iva Dean, have three sons, Michael, Timothy and Todd. The Frakers live at Route 4, Clinton.

Carbide Camera Club

The Carbide Camera Club will hold its monthly meeting, Tuesday, August 10, at 7:30 p.m., at Cheyenne Hall, Oak Ridge. Competition for the month will be slides and prints made outside a 100-mile radius of Oak Ridge.

The program will consist of two parts: (1) a Kodak slide show "Better Travel Pictures," which includes how to plan, take and present better vacation pictures; and (2) a Kodak movie "Let's Make Color Prints." This movie deals with recent advances in color printing materials and how to process color prints.

For further information contact Terry Domm, 3-3031.

Named maintenance supervisors



W. L. Cox Jr.



C. Thomas

William L. Cox Jr. and Clyde Thomas have been named maintenance supervisors in Oak Ridge National Laboratory's Plant and Equipment Division.

Cox, a native of Knox County, joined the Nuclear Division at the Y-12 Plant in 1954 and came to ORNL in 1965. He has worked as a rigger and an iron worker; before his promotion he was a supervisor trainee. He has also been

employed at the Bull Run Sream Plant.

Cox and his wife, Sue, have one son, Douglas E. Cox, a material handler in Finance and Materials Division. They live at Route 15, Beaver Ridge-Byington Road, Knoxville.

Thomas has been with the Nuclear Division since 1962, including two years at the Y-12 Plant. At ORNL he worked first as a laborer and then as a heavy duty truck driver before being made a supervisor trainee.

A native of Oliver Springs, Thomas and his wife, Bette Fay Richmond Thomas, have a daughter, Lisa Ann, and a son, Michael Lynn. The Thomases live at Route 2, Harrison Hills, Lenoir City.

recreationotes

State champ Hedrick to shoot in nationals

Bob Hedrick, a development specialist in the Reactor Division, Oak Ridge National Laboratory, will compete in the national trap shooting championship on August 16-20 in Vandalia, Ohio.

Hedrick qualified for the national contest by winning the state trap shooting championship held near Nashville in June. The event was sponsored by the Tennessee State Amateur Trap Shooting Association. Hedrick's 14-year-old stepson, Samuel Dixon, won the state trap shooting championship in the sub-junior division.

Trap shooting, Hedrick explains, is a game in which clay "birds" the size of four-inch ashtrays are shot out of what is known as a trap at about 80 feet a second and travel an average distance of 38 yards. The sport is similar to skeet shooting, except the clay targets are fired at an unknown angle for the contestant. According to Hedrick, the game originated in Europe several hundred years ago and was played with hand-thrown live pigeons.

Folk dance classes

The Oak Ridge Folk Dancers have begun beginners' classes in international folk dancing. They are held each Thursday from 8 to 10 p.m. at the Craft Room of the Oak Ridge Civic Center.

The classes extend from Thursday, August 5, through September 23. Additional information may be obtained from Ruth Young, extension 3-3641.

Chemical service picnic

The Y-12 Chemical Services Department plans its annual picnic at Cove Lake again this year. All retirees from the Chemical Department are invited.

They will gather at 4 p.m. Saturday, September 4, and dining begins at 5. Just bring your dinner and join the fun. That's at Cove Lake, near Caryville.

Bowling meets

The K-25 Women's Bowling League will have an organization meeting next Tuesday, August 10 at 7:30 p.m. in the nursery at Ark Lanes.

The league is planning expansion this year and welcomes all women bowlers from the three Oak Ridge plants and ORAU. Spouses of employees are also eligible to compete.

Additional information may be obtained from the league secretary, Brenda Smith, at extension 3-1872.

The K-25 Tuesday 8:15 League is meeting August 10 also to organize for fall bowling, with expansion in mind, too. Their meeting is set for 2 p.m., August 10, in the upstairs of Building K-1030.

The Recreation Department also advises that all leagues will be able to expand this year, for the first time. Any individual, or team, should call for information, extension 3-5833.

There are men's teams, women's teams, and mixed teams... whichever suits your fancy.

Other leagues will be calling meetings soon.

Mixed bowling

The Carbide Family Mixed League still has the Oops team on top, with the Smooth Strokes in a close second. Edd Hannahs, with a 562 series; and Edith Duckworth, with a 560, led bowlers recently.

Shifters begin bowling

The K-25 Shifters will begin the winter season the second week of September on Tuesday at 7:30 p.m. at the Tri-County Lanes, Oliver Springs. Anyone interested in bowling with the Shifters, call Jackie McIntyre, extension 3-3731, or the Recreation Department, 3-5833.

Hi power rifle

Jack Huff, Y-12, won the last match of the Carbide High Power Rifle League with a 484 out of a 500. Larry Weston was second with 459 and Bill



BREAM WINNERS AT PADUCAH—Winners in the bream contest, recently staged at the Paducah Plant, include, from left, Hardy J. Pottinger, co-chairman of the fishing committee; first-place Roger Emery; J.D. Turner, Tom Norment; John Elkins, accepting for Barbara Elkins; Ronald Emery and Charles W. Burdette.



BOAST BEST BASS—David L. Thompson was first place winner in the Paducah Gaseous Diffusion Plant's Bass Contest with an entry of 9 pounds 4 ounces. Trailing Thompson were R. B. "Jake" Piercy, second, 6 pound 8 ounces; Charles Allen, third, 5 pounds 12 ounces; Dennis B. Jessup, fourth, 5 pounds 7 ounces; and Albert Pendergrass and Roger Emery, fifth, 5 pounds 2½ ounces and 4 pounds 7 ounces respectively. Above, the winners show off their prizes: from left are James D. Turner, co-chairman of the Fishing Committee; Emery; Pendergrass; Allen; Piercy; Wilson Davis, accepting for Thompson; and Hardy J. Pottinger, co-chairman of the Fishing Committee.

Galyon was third with 450. Other scores were: G. K. Harsh, 446; H. W. Bertini, 440; A. A. Abbatiello, 432; R. W. Wiegand, 396; Joe Lewin, 382; and L. M. Toth, 332.

Golf leagues

Sherrod-Shelton still hold a tight grip on the South Hills Golf League, points ahead of Pappas-Waldrop and Stafford-Madewell.

Zang-Amerine are slight leaders in the Dead Horse Lake League, ahead of Huber-Mustaleski and Bennett-Broders.

In the Southwest Point League it's Kirchler-Marshall, out distancing Crawford-Richardson and Lay-Creswell.

Physics Division picnic slated Aug. 22

The annual ORNL Physics Division Picnic has been set for Sunday, Aug. 22, at Clark Center Recreation Park. Games for all ages will begin at 2 p.m. and dinner will be served at around 6 p.m., with entertainment to follow.

Tickets (adults \$2.50, children under 12 \$1.50) can be obtained from Imogene Wilker, 3-0141, or Anita Barker, 3-1496.

Softball leagues

The Snakes and ESD team in the Atomic League still sport a spotless record, as the Fes-Kids lead the Nuclear League by one-half game.

League standings follow:

ATOMIC LEAGUE		
TEAM	WON	LOST
Snakes	11	0
E.S.D.	11	0
Shifters	10	2
Gas House Gang	9	3
Bruins	9	3
Bio Rejects	9	3
Artie's Army	7	4
Ecology	6	4
BMS-Bioradicals	6	7
Avengers	5	7
Beta 2 Bunters	3	7
Outlaws	3	8
Ridge Runners	3	9
The Steelers	3	10
Mc's Pack	2	9
Hot Dogs	1	11
Rednecks	0	11

NUCLEAR LEAGUE		
TEAM	WON	LOST
Fes-Kids	10	3
The Streakers	9	3
Terodactyls	9	4
Killer Bees	8	5
Knuckle Balls	7	5
Barrier Bombers	8	6
Magnetic Fielders	7	7
Thermos	6	6
Swingers	6	7
Knockers	4	9
Odds & Ends	2	11
Ding-Bats	2	11

Tee-Off Time Application for August 28

(Check Appropriate Plant)

- ☐ ORGDP — Dead Horse Lake
☐ Y-12 — Wallace Hills
☐ ORNL — Southwest Point

LEADER _____

Phone _____ Bldg. _____

Time Preferred _____

COMPLETE AND RETURN TO YOUR RECREATION OFFICE

Entries must be received prior to drawing on August 25, 2 p.m.

ORGDP — Building K-1001 — C Wing — MS 122

Y-12 — Building 9711-5 ORNL — Building 2518

Tee-off times for all tournaments will be drawn on Wednesdays prior to each Saturday's tournament. Golfers are responsible for reserving their own carts by contacting the pro shop following drawing for tee-off times.



Memory loss in old age

by T. A. Lincoln, M.D.

(Editor's Note: Dr. Lincoln alternates his regular column with "The Medicine Chest," where he answers questions from employees concerning health in general. Questions are handled in strict confidence, as they are handled in our Question Box. Just address your question to "Medicine Chest," NUCLEAR DIVISION NEWS, Building 9704-2, Stop 20, Y-12, or call the news editor in your plant, and give him or her your question on the telephone.)

As many of the readers of this column know all too well, forgetfulness begins long before old age. At 50, it can be an aggravating nuisance, but is usually not a serious handicap. After 75, however, it may become so severe as to be handicapping and even disabling.

Memory consists of three basic processes: registration, retention, and recall. During the registration process, the thought, experience or association has to be imprinted in the brain. When the event is associated with a strong emotional impact, it is more likely to register. What person forgets that first taste of adolescent love or the sudden loss of a member of the family?

When a person gets old, emotional impact of events often cools. The need to register becomes reduced. "I won't need that name or number anyway."

If a person is preoccupied with the "noise" of innumerable distracting events, feelings and concerns, registration is more difficult. This "noise" is greatest probably during middle age, but its toleration and the ability to select those items which need to be stored diminishes with age. For an event to register, there has to be a "holding" process in the brain, and if this is distracted by extraneous thoughts or disturbances, the event does not "stick".

A compensatory mechanism which the aged learn sometimes to use is called load-shedding, or narrowing of attention. Concentration on what is important can enable registration to continue at a high level. Many aged people continue remarkably able to learn new things and their analytical capabilities remain strong.

Association important for retention

Retention is a function of time and association. Isolated facts are more difficult to retain than facts associated in a broad related framework; and the longer the time since registration, the poorer the retention.

The paired associate learning test is frequently used to test memory. The subject is asked to remember meaningless associations of pairs of words. For example, cabbage with pen, knife with chimney or battle with comb. The first word is the stimulus word, and the subject is tested to see how well the associated word can be recalled. In such a test there are no cues, so it is a "pure" memory test. When memory is tested using associated and relevant experiences, retention is improved.

The ability to integrate these associations is often impaired in aging. It is as though the ability to make cross connections is impaired. The circuitry has to be kept simple in order for an association to hold.

Recall: making connections

Recall requires the ability to make the necessary connections in the brain once a cue stimulus has been received. A good example is the struggle to remember a name. If one recalls that the name began with a certain letter or sound, he can try various sounds until suddenly a connection is made.

Memory impairment usually involves loss of varying amounts of all three of these functions. It is easy to assume that memory loss is just a defect in ability to recall. When one hears an old person relate in remarkable detail an early life experience, it is obvious that recall may still be good. The inability to remember things which occurred only a few hours or minutes ago is frequently an impairment in registration more than recall.

'Benign' vs. 'malignant'

Typically, memory loss is relatively benign, even though it becomes more handicapping as one gets older. It often is intermittent with periods of quite good memory. Dr. V. A. Kral of McGill University, Montreal, divides senescent (loss of memory in old age) forgetfulness into two classes: benign and malignant. In the benign form, the individual tends to forget relatively unimportant pieces of information, but can remember most of the whole. For example, a person could remember that a son was married in a distant city 25 years previously, but can't remember the name of the city.

A person with what Kral unfortunately called "malignant" forgetfulness is unable to recall a total experience. In the above example, such a person would not remember that a son had ever been married. Another term for this severe loss is *senile dementia*.

In both types of forgetfulness, memory for recent events is more easily forgotten, but in the malignant type the loss is so rapid that confusion and disorientation result. Individuals get lost near home, they leave the stove on, or they don't recognize neighbors or friends. Possessions are mislaid and sometimes the family is accused of stealing them. In an effort to fill the gaps in memory, the victim

Summer recreation schedule

Monday	Softball Leagues, Clark Center Recreation Park, 6-10 p.m. Table Tennis League, Norwood Junior High School, 7-9:30 p.m. Golf League, Southwest Point (Kingston), 5:30 p.m.
Tuesday	Pistol League, Oak Ridge Sportsmen's Association, 6:30 p.m. Golf League, Deadhorse Lake (I-40 at Highway 162), 5:30 p.m. Camera Club, Cheyenne Hall (Oak Ridge), 7:30 p.m. second Tuesday of each month Softball League, Clark Center Recreation Park, 6-10 p.m.
Wednesday	Rescheduling day for rained-out softball games when necessary, 6 p.m.
Thursday	Badminton (informal), Highland View School (Oak Ridge), 8 p.m. Table tennis (informal), Highland View School, 8 p.m. Golf League, South Hills (Oak Ridge), 5:30 p.m. Softball Leagues, Clark Center Recreation Park, 6 p.m. Family Bowling League, Tri-County Lanes (Norwood), 5:45 p.m.
Saturday	Golf tournaments as announced - monthly at area courses
Sunday	Badminton (informal), Highland View School, 6:30 p.m. Table tennis (informal), Highland View School, 6:30 p.m.

Clark Center Recreation Park will be open through October 1, from 5 a.m. until 11 p.m. daily. The Recreation Office has travel and vacation literature for employees, as well as membership and discount coupons for Disney World, Six Flags over Georgia and Opryland. For more information, call 3-5833.

anniversaries

ORGDP

30 YEARS

Andrew G. Wilde, Oak Ridge Area Electricity Distribution Department; Lena G. Acres, Dimensional Inspection; Vernon W. Jones, Grounds Maintenance Department; Thomas B. Keylon, Shop Service Department; and Kenneth L. Johnson, Chemical and General Field Maintenance.

25 YEARS

Philip J. Breman, Clarence E. Robinson, James E. White, James F. Warner and Virginia L. Roisum.

20 YEARS

Joseph P. Hurst and Joseph E. Eve.

GENERAL STAFF

30 YEARS

Ray D. Ellison, ORNL Computing Applications.

25 YEARS

James L. Lucius, Davis H. Wallace, Robert L. Stephenson and Alfred A. Brooks Jr.

PADUCAH

25 YEARS

Ira W. Myers, Thomas E. Goode, James C. Watkins, William A. Van Vactor, L. C. Jamison, Effie C. Lewis, Antoinette P. Piercy, Eugene S. Page, Robert L. Flake, Eugene P. Larson, Davis D. Barclay, James T. Davis, Bobby Grief, James H. Renfro, James E. Wilkins and Babe R. Peebles.

ORNL

30 YEARS

Claude B. Adderholdt, Employee Relations Division; Millard L. Myers, Reactor Division; Walter J. Stelzman, Metals and Ceramics Division; Howard T. Enix, Instrumentation and Controls Division; Billy F. Early, Solid State Division; Charles L. Segaser, Energy Division; Robert F. Myrick Jr., Plant and Equipment Division; Cecil E. Higgins, Analytical Chemistry Division, and Lewis A. Byrd, Chemical Technology Division.

25 YEARS

Edwin D. Gupton, Thomas A. Lincoln, Guy F. Peterson, Lorenzo D. Odum Jr., Samuel A. McCosh, Dock A. Stewart, Ray E. Hill, Kyle F. Stooksbury, Raymond E. Druschel and Wimmer J. Leonard.

20 YEARS

John H. Evans, Savanna C. Maddux, William H. Greene, Odra W. Burke, Richard A. Strehlow, Margaret D. Weaver, Joseph E. Carr, William P. Rose, Herbert M. Beckler and Raymond E. Keny.

tells "stories" which the family knows are untrue. The victim usually deteriorates rapidly and becomes slow, apathetic and feeble.

There is a tendency to blame senility on poor circulation to the brain. It is true that there is an arteriosclerotic type of senility, but it is less common—at least in its "pure" form—than simple *senile dementia*. The two obviously can overlap.

The former more often affects men, particularly those with long-standing high blood pressure. The memory loss is patchy, with periods of normal memory. Both the benign and malignant types not related to arteriosclerosis occur more often in women and frequently seem to have a genetic component. It has been estimated that about half of women over 80 have significant impairment of memory, but only 2.5 percent have disabling *senile dementia*.

Memory loss is common in all the aged but it is infrequently totally disabling. With patience and understanding, most people can usually tolerate forgetfulness in an elderly parent relatively easily. A familiar environment and a loving family are the best antidotes for this distressing problem.

retirements



Bryson



Borum



Hart



Smith



Turner

Lloyd R. Bryson completes the roster of Oak Ridge National Laboratory's July retirees. An electrician in Plant and Equipment Division, Bryson chose early retirement after 18 years of company service. His home is at 5201 Schubert Drive, Knoxville.

Four Y-12ers elected early retirement at the end of July.

Harold Borum, Building Services Department, has more than 28 years with Union Carbide. He lives at Route 2, Oliver Springs.

Lendon E. Hart, a foreman in Process Maintenance, joined Union

Carbide in 1950. He lives at Route 2, Oliver Springs. His wife, Naomi, works in the Maintenance Division at Y-12.

Earl W. Smith, Standards and Surveys, lives at 108 Pallas Road, Oak Ridge. He joined Union Carbide in 1950.

Paul W. Turner, Development Division, left with 26 years company service. He lives at 108 Poplar Road, Oak Ridge.

Malcolm W. West, maintenance heavy equipment operator in the Fabrication and Maintenance Division of ORGDP, retired at the end of July. He lives at Route 3, London.

Bloodmobile unit set August 18, 19

More blood. That's the word from the American Red Cross, stressing the increased useage of human blood in our local hospitals.

The Bloodmobile will visit Oak Ridge again August 18, 19, this time at a new location ... the Oak Ridge Civic Center, on the Turnpike. For the convenience of donors the summer drive has been scheduled at the Civic Center where air conditioning is available.

The hours are the same as usual drives ... from 3 until 9 p.m. on Wednesday, August 18; and from noon until 6 p.m. on Thursday, August 19.

This is the first drive on the newly increased quota that the Oak Ridge Chapter of the American Red Cross has for 1976-77. Our present quota is 250 units of blood per visit ... or 500 for the August visit.

In making the quota, all Anderson County residents and their families are completely covered for blood needs, anywhere in the country that it is required.

Donors simply drop by the Civic Center during the drive. It usually takes around an hour to be processed, as medical histories must be taken, blood pressure measured, and blood analyzed. Anyone between the ages of 17 and 65 may give, if they are in good health. Seventeen-year-olds must have the signature of a parent consenting to the donations ... but those over 17 need no signatures. While donors over 65 are not encouraged, some do show up, with releases from their personal physician, allowing them to give.

The Red Cross blood program is completely voluntary, and the risk to the recipient of blood is lessened when the blood is willingly given rather than sold for profit. Red Cross



D. J. Davis

ORGDP names Davis to Accounting post

David J. Davis has been named an Accountant I in the General Accounting Division at the Oak Ridge Gaseous Diffusion Plant.

Davis, who was raised in Clinton, is presently enrolled at the University of Tennessee majoring in management and supervision administration. Prior to joining Union Carbide 10 years ago, he worked at the Admiral Realty Company.

Mrs. Davis is the former Mary Stewart, and they have a daughter, Leah Dawn. Their home is at 123 Parsons Road, Oak Ridge.

blood is provided to participating hospitals at less than cost. (And a credit system is often negotiated with hospitals outside the program.)

A Blood Center is soon to be established in Paducah, and will be described in an edition of the *Nuclear Division News* soon. Many Union Carbide employees in that plant are active in getting the program started.

That's August 18, 19. See you at the Bloodmobile with your sleeve rolled up!

Biomedical school receives NIH aging research grant

The University of Tennessee-Oak Ridge Graduate School of Biomedical Sciences has been awarded a \$466,000 grant from the National Institute of Aging of the National Institutes of Health (Department of Health, Education and Welfare) to be used over a five-year period to support predoctoral and postdoctoral student training in aging research.

The Biomedical School is an integral part of the Graduate School of the University of Tennessee, Knoxville, and is operated in conjunction with the Biology Division of Oak Ridge National Laboratory.



Stulberg

Melvin P. Stulberg, a senior biochemist with the Biology Division and program director for the training grant, said the grant was designated for use in training in molecular and cellular research involving the causes of normal aging in mammals. The funding will provide stipends, tuition, fees, research expenses and travel funds for four postdoctoral and four predoctoral students for five years.

Stulberg said: "Aging processes are highly complex phenomena that will be understood only through a multidisciplinary research approach. The School, through its affiliation with the Biology Division, represents a broad spectrum of biomedical disciplines uniquely qualified to present an integrated program for training students to conduct such research efforts."

He said that a sufficient understanding of the causes of aging can provide for the subsequent development of methods for the early detection of age-associated deterioration and, hopefully, methods to control or reverse those debilitating processes. He emphasized that the ultimate goal of biomedical research in aging is to

provide an improvement in the quality of life of the aged.

The Biomedical School, which began in 1966 with six students, now has 35 postdoctoral students, 45 doctoral candidates and two masters' degree candidates. In addition, the School administers the Carnegie Program for over 20 black pre-baccalaureate students and faculty members from predominantly black colleges and universities.

CPS exam courses set at high school

Special courses in preparation for the Certified Professional Secretary examination will begin on September 8. Three of the instructors are from the Nuclear Division staff.

Under the sponsorship of the Oak Ridge Chapter of the National Secretaries Association, the following courses will be offered:

Economics and Management, September 7 through October 12, Ernest Choat, instructor;

Accounting, October 20 through January 5, Carl Butcher, instructor;

Environmental Relations, January 6 through February 9, Jan H. Wing, instructor;

Business Law, February 16 through March 23, Mahlon Townsend, U.T. professor;

Secretarial Procedures, March 22 through April 27 - and **In-Basket** March 28 through April 25, both with Virginia Hatch, instructor.

All classes are held at the Oak Ridge High School from 6:30 to 9:30 p.m., are approved under the Carbide Educational Assistance Program for partial reimbursement upon satisfactory completion of the work.

Membership in NSA is not a prerequisite for taking the exam.

Registration forms may be obtained, as well as additional information, from Charmaine Holbert, extension 3-4223.



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